

NEW AND LITTLE KNOWN INDIAN HYMENOPTERA.

BY

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The following paper deals with the Fossorial genera *Astata*, *Tachytes*, *Tachyspher*, and *Larra*, which form a portion of the Sphegidae. All these are numerous in sandy localities, and I had good opportunities for studying them at Deesa, where the soil is specially suited to their habits.

Astata argentofacialis.—(Cam. Mem. Manch. L. Ph. Soc. (4) ii, 1889, p. 151).

This species, described from specimens from Barrackpore, was omitted by Bingham in Vol. I of Hymenoptera.

Astata quetta.—(Nurse, J. Bo. Nat. Hist. Soc., Vol. XIV., p. 92).

When I described this species, I considered some males I had, though much larger than the ♀ described, to belong to the same species. On re-examination, however, I feel sure they belong to another species, and they are described below as *A. resoluta*.

Astata resoluta, n. sp.

♂. Clypeus and front with shallow punctures, the portion of the front about the ocelli shining, almost impunctate; mesonotum finely and closely punctured at the base and at the sides, less closely on the disc; base of scutellum shining, impunctate, remainder of the segment closely punctured; median segment long, longitudinally striate and reticulate, its apex rounded; abdomen minutely aciculate. Anterior ocellus nearly twice the size of the others, no furrow on front; abdomen short, about $\frac{2}{3}$ the length of thorax and median segment, apex of basal segment constricted, apices of the others depressed. Black, covered with moderately dense white pubescence; mandibles, except their tips, apex of scape of antennæ, apices of abdominal segments (frequently the greater part of the abdomen), femora at apex, and the whole of the tibiæ and tarsi red. Wings clear hyaline, nervures dark brown, tegulæ testaceous; 2nd cubital cell at top $\frac{1}{3}$ the length of 3rd, and less than half the space bounded by the recurrent nervures, which divide the 2nd cubital cell into three subequal parts on the cubital nervure.

Hab.—Quetta; not uncommon.

Length—7 mm.

Astata compta, n. sp.

♀. Clypeus and front moderately closely punctured, the portions near—the anterior ocellus and the margins of the eyes shining, with scattered punctures, mesonotum, scutellum, and postscutellum closely punctured, except on the disc of the two former, which are shining and more or less impunctate; median segment rather short, strongly longitudinally striate and reticulate, roundly truncate at apex, the apical portion finely rugose; abdomen smooth, shining. Antennæ pilose, the anterior ocellus scarcely larger than the others, the portion of the front below it without a furrow; abdomen nearly as long as the thorax and median segment, the segments very slightly depressed at apex.

legs strongly spined. Black; the mandibles more or less red; pubescence grey, moderately dense; wings hyaline, forewing with a slight flavous tinge, and a very slight infuscation about the radial cell; nervures bright testaceous, tegulae dark testaceous.

Hab.—Mt. Abu.

Length—8 mm.

Astata selecta, n. sp.

♀. Head minutely but shallowly punctured, the space below anterior ocellus and the vertex almost impunctate; mesonotum, scutellum, except at base, and postscutellum closely and finely punctured, median segment longitudinally striate and reticulate, abdomen smooth. Front without a furrow, median segment rounded posteriorly, with a slight transverse carina at the apex of the striation; abdomen with the apices of the segments slightly depressed. Black: the mandibles in the centre, the first two or three abdominal segments, and the femora, tibiae, and tarsi red; apical abdominal segments bronzy testaceous; pubescence whitish, not very dense; wings hyaline, the apex beyond the radial cell infuscated; nervures, stigma, and tegulae brownish testaceous, the recurrent nervures divide the 2nd cubital cell into three equal parts.

Hab.—Deesa; January and September.

Length—5½-6 mm.

Astata interstitialis (Cam.).

The type specimen is a ♂, not a ♀. I cannot see any transverse striation on the median segment, which I consider finely rugose with a few short longitudinal striae at extreme base.

Astata absoluta, n. sp.

♂. Clypeus and front closely and finely punctured, the space below the anterior ocellus shining; mesonotum, scutellum, except on disc, and postscutellum very closely punctured; disc of scutellum shining, almost impunctate, median segment rather short, strongly longitudinally striate and reticulate, its apex roundly truncate, the truncated portion finely rugose, abdomen minutely aciculate. Antennae conspicuously pilose, anterior ocellus twice the size of the others, with a furrow running from it to the base of antennae; abdomen short, the apex of the first segment constricted, the apices of the remainder depressed. Black; the pubescence greyish, moderately long; the apices of the abdominal segments narrowly golden testaceous; wings hyaline, nervures bright testaceous, tegulae black; radial cell rather long, 2nd cubital cell at top $\frac{1}{3}$ the length of 3rd, $\frac{2}{3}$ and the length of space bounded by the recurrent nervures, which are received into the 2nd cubital cell before and after the middle respectively.

Hab.—Mt. Abu.

Length—11 mm.

Astata kashmirensis, n. sp.

♂. Clypeus and front very finely and closely, pro- and mesonotum, scutellum, except at base, and postscutellum closely and more strongly punctured, the punctures being sparser on the disc of mesonotum, and the base of the scutel-

lum nearly smooth ; median segment finely longitudinally striate and reticulate ; abdomen minutely aciculate. Clypeus short, transverse anteriorly ; anterior ocellus not much larger than the others, with a distinct furrow from it to the base of antennæ ; median segment rounded posteriorly. Black ; the apex of 1st, whole of 2nd, and base of 3rd abdominal segments red, anterior tibiæ and all the tarsi more or less rufous ; pubescence greyish, moderately dense ; wings clear hyaline, nervures blackish, stigma dark testaceous, tegulæ black : radial cell long, 2nd cubital cell at top $\frac{1}{3}$ the length of 3rd, and half the length of the space bounded by the recurrent nervures, which are received into the 2nd cubital cell so as to divide it into three nearly equal portions.

Hab —Kashmir, 5,000-6,000 ft.

Length—7 mm.

Astota nigricans (Cam.).

Bingham states that there is a carina on the median segment. But there is no mention of this in the original description, nor is there any in my specimens. I have one which has the abdomen more or less red, but agrees otherwise with Cameron's description.

Tachytes.

This genus was common at Deesa, and I obtained a large number of specimens. The species are closely allied and difficult to discriminate. In the great majority the pubescence on the pygidium is golden in the ♀, and silvery in the ♂. Several species have been described from my specimens by Bingham, Cameron, and myself, but I have still a large number of specimens awaiting determination, for which the examination of the types of nearly all the species hitherto described from India will be necessary.

I have several stilopised specimens from Deesa.

Tachytes monetaria (Smith).

Bingham states that the wings of the ♂ have a distinct yellow tinge. He sent me two specimens from Rangoon as this species which were certainly not *monetaria*. In all my specimens the wings of both sexes are fusco-hyaline.

Tachytes proxima (Nurse, A. M. N. H., May 1903, p. 515).

I stated in describing this species that it was common at Deesa, but this is not the case, for I find that the males which I took to belong to my single ♀ apparently belong to another species.

Tachytes hospes (Bingh., J. Bo. Nat. Hist. Soc., Vol. XII., p. 119).

♂. Generally similar to the ♀, but smaller (12-15 mm.) and somewhat more pilose ; pile on front more approaching a golden tint, scape of antennæ red ; anterior femora with a deep emargination at base, median segment more coarsely striate, the striation transverse ; pubescence and pile silvery throughout ; wings lighter, though always with a slight fuscous tinge.

This species was fairly common at Deesa in June. I have a number of specimens, and I am satisfied that they are the same species, though the ♀ is considerably the larger. In the ♀ the abdomen is entirely without the pilose bands usual in this genus. The disc of the median segment is in both sexes

without pubescence or pile, showing the striation clearly. Although the anterior femora are emarginate in the ♂, it is a *Tachytes*, and not a *Tachysphex*. It is very distinct from any other Indian species of the genus.

Tachytes opulenta, n. sp.

♀. Clypeus and front with the sculpturing hidden by the pubescence, except at the apex of the clypeus, which is rugosely punctured; vertex, mesonotum, scutellum, postscutellum, and median segment very finely and closely punctured; abdomen minutely aciculate, 1st ventral segment minutely and closely punctured, remainder shining, with scattered punctures, closely punctured at apex. Front with a distinct furrow not reaching the vertex, and with the usual smooth curved carina from each of the posterior ocelli towards the anterior ocellus; distance of eyes apart at vertex equal to the 2nd joint of flagellum; mesonotum with three longitudinal carinae at base, not reaching the middle; median segment short, roundly truncate at apex, with a median longitudinal furrow ending in a fovea where the truncation begins; there is no trace of a furrow on the scutellum. Black; clypeus and front, apices of 1—4 abdominal segments, apex of femora, the whole of the tibiae, and the metatarsi covered with thick golden pile; thorax with sparse greyish pubescence; sides of abdomen and penultimate segment at apex with stiff black and testaceous hairs; pygidium with black and golden pubescence intermixed; wings flavo-hyaline, nervures and tegulae testaceous.

♂. Similar, eyes separated only by half the length of the 2nd joint of flagellum, pubescence on pygidium silvery.

Tachytes astuta, n. sp.

♂. Head and thorax very closely and finely punctured, granular, abdomen minutely aciculate, ventral segments shallowly but somewhat closely punctured. Anterior margin of clypeus rounded, strongly depressed, with two blunt teeth on each side; an impressed line from vertex to base of antennae; the ocelli of the form usual in the genus; the distance apart of the eyes at vertex is less than the length of the 2nd joint of flagellum; scutellum with an indistinct median impression; median segment roundly truncate posteriorly, with a deep longitudinal impressed line along the posterior half of the segment; pygidium broadly rounded at apex. Black; the palpi and mouth parts, calcaria, tibial and tarsal spines, and claws at base red; scape of antennae, clypeus and front with pale golden pubescence; thorax, median segment, and basal abdominal segment with long pale pubescence, which has a golden tint in fresh specimens; 1st abdominal segment at apex narrowly, and 2nd, 3rd and 4th broadly covered with silvery pile; the pubescence on pygidium silvery; legs with short golden pile. Wings flavo-hyaline, nervures and tegulae rufo-testaceous; the 1st recurrent nervure is received into the 2nd cubital cell near its basal angle, so that the space on the cubitus bounded by the 1st cubital and 1st recurrent nervures is less than half the space bounded by the two recurrent nervures.

Hab.—Jubbulpore: Mt. Abu; Rangoon.

Length.—13-14 mm.

Near to *T. vicinus* (Cam.), but may be distinguished by the distance apart of eyes at vertex being less than the length of 2nd joint of flagellum, whereas in *vicinus* it is nearly the length of 2nd and 3rd antennal joints united.

Tachysphex.

The species of this genus are, like those of the last, closely allied and difficult to separate. I have a number of specimens from Quetta still awaiting determination.

Tachysphex instructus, n. nom.

Cameron has described two species under the names of *striolata* and *striolatus* respectively (Tr. Ent. Soc., 1903, p. 126, and J., Bom. Nat. Hist. Soc., Vol. XVIII, p. 305). For the latter I propose the name *T. instructus* to prevent confusion.

Tachysphex erythrogaster (Cam.).

The ♂ is generally similar to the ♀, but the 2nd cubital cell is narrower above, and the eyes are closer at vertex, being not further apart than the length of 2nd and 3rd joints of the flagellum united; the pygidium is deeply and roundly incised at apex: the emargination at the base of anterior femora is wide but not deep.

Length.—8-12 mm.

Tachysphex selectus, n. sp.

♂. Head minutely and closely punctured: mesonotum, scutellum, and postscutellum less closely but more strongly punctured, median segment rather finely reticulate, abdomen minutely aciculate. Clypeus rounded anteriorly, front with an impressed line; the distance apart of the eyes at vertex is about equal to the 2nd joint of flagellum, which is slightly shorter than the 3rd joint: anterior femora with a wide but shallow emargination at base; median segment of the same length as the mesonotum, roundly truncate at apex; abdomen with the apices of the segments depressed; pygidium roundly and widely incised. Black; all the tibiae and tarsi dark red; pubescence sparse, greyish; pile on clypeus and front bright golden, on the legs and the apical margins of abdominal segments silvery; wings hyaline, nervures and stigma piecous, inclining to testaceous about the base of the wings; tegulae rufo-testaceous; 2nd and 3rd cubital cells subequal on radial nervure, 1st rather longer; 1st recurrent nervure received into 2nd cubital cell before the middle, 2nd at the middle.

Hab.—Bombay; October.

Length—8 mm.

Nearest to *T. testaceipes* (Bing.), but may be at once distinguished by the golden pile on clypeus and front.

Tachysphex pcculator, n. sp.

♂. Head, mesonotum, scutellum, and postscutellum very closely and finely punctured, the mesonotum almost granular; median segment very finely rugose, abdomen minutely aciculate. Front with a shallow furrow: distance of eyes apart at vertex about equal to the 2nd joint of flagellum; anterior

femora scarcely emarginate at base, but with a slight depression; median segment about the length of mesonotum, roundly truncate posteriorly, the upper portion bounded at the sides and apex by a furrow; apical margins of abdominal segments depressed; pygidium roundly incised. Black; the mandibles reddish before apex; all the tarsi rufo-testaceous; apical margins of abdominal segments under the pile testaceous. Pubescence on clypeus silvery, on front rather long and dark fuscous; on thorax silvery and rather thick at the sides; abdominal segments 1-3 with somewhat wide bands of silvery pile; wings hyaline, nervures, stigma, and tegulæ rufo-testaceous; the 1st and 2nd cubital cells are subequal on the radial nervure, the 3rd shorter; the 1st recurrent nervure is received into the 2nd cubital cell before the middle, the 2nd after the middle.

Hab.—Deesa; November.

Length—12 mm.

This species is nearest to *T. testaceipes* (Bing.), but may be distinguished from it by the finely rugose median segment. From *T. selectus* described above it may be distinguished by the pubescence on front being dark fuscous.

Tachysphex heliophilus, n. sp.

♀. Clypeus sparsely, front and vertex closely and finely punctured; mesonotum rugosely punctured, granular; scutellum shining, sparsely punctured; median segment minutely reticulate, its apex transversely striate; abdomen smooth. Front with the usual furrow; the distance of the eyes apart at vertex slightly greater than the length of 2nd joint of flagellum; median segment about the length of mesonotum, roundly truncate posteriorly; abdomen shorter than head and thorax united, pygidium with a few punctures. Black; the 1st and 2nd abdominal segments red; pubescence and pile short, sparse, silvery; calcaria and tibial and tarsal spines black. Forewing flavo-hyaline, with a light fuscous cloud across the radial. 2nd cubital, and discoidal cells; nervures and tegulæ rufo-testaceous; radial cell rather long, rounded at apex; the 2nd and 3rd abscissæ of radial nervure subequal, the 1st slightly longer; the 1st recurrent nervure is received into the 2nd cubital cell before the middle, the 2nd at the middle; hindwing hyaline.

♂. Similar, smaller, the pubescence on the front golden; the posterior tibiae and all the tarsi more or less rufous; anterior femora emarginate at base.

Hab.—Deesa; February.

Length—♀ 7½ mm. ♂ 6 mm.

The only Indian species with a red base to the abdomen and a fuscous cloud across the forewing.

Tachysphex minutus, n. sp.

♀. Head, mesonotum, scutellum; and postscutellum closely and finely punctured; median segment longitudinally striate at base, transversely striate at apex; abdomen aciculate, almost punctured. Clypeus transverse anteriorly, front with a shallow impressed line; the distance apart of the eyes at vertex is less than the length of the 2nd and 3rd joints of the flagellum united; median segment very short, about half the length of mesonotum, truncate posteriorly; abdomen

as long as the head and thorax united, pygidium very long, sharply pointed with a few scattered shallow punctures. Black; the mandibles, labrum, scape of antennæ, and apical 3 or 4 joints of the tarsi more or less rufous; calcaria black, tibial and tarsal spines pale testaceous; pile very short and sparse, silvery. Wings hyaline, nervures fuscous, tegulæ black; radial cell very short, the 1st, 3rd and 4th abscissæ of radius subequal, the 2nd less than half the length of the others; the 1st and 2nd recurrent nervures are received into the 2nd cubital cell before and after the middle respectively.

♂. Similar, smaller; anterior femora slightly emarginate, pygidium deeply and roundly incised; entirely black.

Hab.—Deesa; January, September, October.

Length ♀ 7 mm. ♂ 5 mm.

Nearest to *T. striolata* (Cam.), but may be distinguished by the 2nd cubital cell being much smaller on the radial nervure.

Tachysphex ablatus, n. sp.

♀. Head and thorax very finely and rugosely punctured, abdomen minutely aciculate; pygidial area impunctate. Clypeus almost transverse anteriorly, incised in the middle; antennæ with 2nd and 3rd joints of the flagellum subequal; the distance apart of the eyes at vertex less than 2nd joint of flagellum; the apex of the median segment has traces of a furrow, and is obscurely transversely striate. Front, vertex, and thorax black; scape of antennæ, clypeus, mandibles, except their tips, the whole of the legs and abdomen light red; flagellum of antennæ blackish; most of the tibial and tarsal spines pale testaceous, but a few are darker; calcaria and claws dark red, sometimes almost black. Pubescence and pile silvery, thick but not very long on front and thorax, where it almost entirely hides the sculpturing. Wings hyaline, nervures and tegulæ rufo-testaceous; the 1st and 3rd abscissæ of radius and the space bounded by the recurrent nervures are subequal: the 2nd abscissa of radius much shorter.

Hab.—Deesa; June, August, September.

Length—11-14 mm.

Very near to *T. erythrogaster* (Cam.) in general appearance, but the eyes are much closer together at vertex.

Tachysphex gujaraticus, n. sp.

♀. Head, mesonotum, and scutellum very closely and finely punctured; median segment rather obscurely longitudinally striate; abdomen minutely aciculate, pygidium smooth. Clypeus almost transverse anteriorly; 2nd and 3rd joints of flagellum subequal; the distance apart of the eyes at vertex is rather less than the length of the 2nd and 3rd joints of the flagellum united; median segment truncate posteriorly, with an obscure furrow. Red; the flagellum of antennæ, front, vertex, and thorax, except the legs, black. Pubescence silvery, thick but not very long; it usually hides the sculpturing of most of the head and thorax. Wings hyaline, nervures and tegulæ rufo-testaceous; 2nd and 3rd abscissæ of radius and the space bounded

by the recurrent nervures subequal; radial cell rather short, truncate at apex.

♂. Similar, but eyes much wider apart; anterior femora deeply emarginate at base.

Hab.—Deesa; common.

Length.—♀ 6 mm. ♂ 5. mm

Larra simillima (Smith).

This species was common at Deesa in June, and I have specimens from Mt. Abu and Jubbuipore. The ♂ is very unlike the ♀, and has not yet been described, unless it is the form described by Cameron as *fuscipennis*.

♂. Head and thorax closely punctured, the extreme anterior margin of the clypeus smooth and shining, the vertex less strongly punctured than the front; mesonotum more strongly but less closely punctured than the median segment, on which in the centre above the punctures run into transverse striæ; on the scutellum and postscutellum the punctures are finer than on the rest of the thorax; abdomen very finely and closely punctured. Anterior margin of clypeus produced in the centre, with a slight median indentation, and emarginate on either side of the produced portion; 1st joint of flagellum rather shorter than the two following united; the portion of the front about the ocelli somewhat depressed; mesonotum with a median longitudinal impression at base; median segment roundly truncate posteriorly; abdomen with the apical margin of the segments slightly depressed; pygidium closely punctured, very slightly pubescent. Head and thorax with dense but somewhat short greyish pubescence; antennæ, legs, and abdomen pruinose. Black; the greater part of the first three abdominal segments dull red, apical margins of the remaining segments rufescent. Wings fusco-hyaline, almost hyaline at base; nervures, and stigma brownish testaceous; tegulæ shining testaceous, their margins punctured.

Hab.—Deesa.

Length.—11-14 mm.

